WEATHER CONDITIONS ON THE NORTH ATLANTIC DURING DECEMBER, 1914.

The data presented are for December, 1914, and comparison and study of the same should be in connection with those appearing in the REVIEW for that month. Chart IX (XLIII–140) shows for December, 1914, the averages of pressure, temperature, and the prevailing direction of the wind at 7 a. m., seventy-fifth meridian time, together with the locations and courses of the more severe storms of the month.

PRESSURE.

For the month as a whole the distribution of the atmospheric pressure over the greater part of the ocean differed considerably from the normal, as shown on the Meteorological Chart of the North Atlantic Ocean for December. The Azores high was about 8 degrees west of its normal position, and slightly less in area, and greater in intensity than usual. The isobar of 29.35 inches, showing the lowest mean barometer reading for the month, extended as far south as the fifty-fifth parallel, at a point where the normal pressure is about 29.70 inches. This line marks the southern boundary of the Icelandic low, although there were so few observations received north of the sixtieth parallel and west of the twentieth meridian that it was impossible to plot the center of this area, which was apparently some distance south of its normal position. The distance between the Azores high and the Icelandic low was less and the gradient between them greater than usual: the number of days with heavy winds and disturbed conditions was much above the average in the area between these two great centers of action.

STORMS.

Along the middle and eastern portions of the northern sailing routes the Meteorological Chart of the North Atlantic for December shows that the highest normal percentage of gales of 48 miles an hour or over, for any one 5-degree square, is 30. For December, 1914, there were several squares in the same general locality where gales were reported on from 17 to 18 days, or a percentage of 55 and 58, respectively. There was not a single day that winds of gale force were not reported on some part of the ocean north of the fortieth parallel, and in marine circles the month was considered as being unusual for its stormy character.

Only two storm tracks are shown on Chart IX, as the center of many of the lows from which the gales originated were too far north to plot, and in other cases the movements of the storms were either too uncertain or there were not enough observations received for an accurate determination of their positions.

On December 7 a low (1 on Chart IX) appeared about 4 degrees east of Hatteras. The winds were moderate and variable near its center and south of it, although vessels between the thirty-eighth and forty-second parallels, and the coast and sixtieth meridian, reported easterly and northeasterly winds of from 48 to 64 miles an hour, with hail and rain. The disturbance moved slowly along the coast in a northeasterly direction and on the 8th was east of New York, near the sixty-sixth meridian. Several vessels a short distance north of the center reported winds of high velocities, although the storm area was less than on the previous day. Between the 8th and 9th the disturbance increased its rate of movement and on the latter date was central near latitude 45° and longitude 40°. While the barometer had fallen somewhat since the day before, the wind had apparently decreased slightly, a maximum velocity of 48 miles being reported by vessels between the forty-sixth and sixty-second meridians, snow, rain, and hail occurring near the forty-sixth parallel between the fortieth and fifty-sixth meridians. The storm traveled in a north by east direction with decreasing speed and on the 10th was near latitude 50° and longitude 46°, the barometer having fallen to 28.76 inches, while the wind and weather conditions had changed but little. From this point it increased in violence, and on the 11th the barometer reading was 28.40 inches at its center, near latitude 51°, longitude 18°, while in the west and southwest quadrants of the area north and northwest winds of from 40 to 64 miles an hour prevailed. Continuing in nearly the same direction and decreasing in both rate of movement and intensity, the storm was central on December 12 near latitude 50°, longitude 12°. On the 13th it had moved to latitude 49°, longitude 7° W., the barometer having fallen slightly, although the winds within 10 degrees of the center ranged from light to moderate. On the 14th it was central near Holyhead, England, and on the 15th the center was between Shields and Yarmouth, on the east coast of England. The wind velocities on these two days were somewhat higher than on the 13th, the maximum force reported being 48 miles an hour, with rain and hail over a large portion of the area.

On the chart of tracks of low areas for December, 1914 (XLII–86), a low (II on Chart IX) is shown that first appeared on the chart on December 17 in northern Saskatchewan. This moved in a southeasterly direction until the night of the 18th, when it was near White River, Ontario, thence changing to a nearly due easterly course it reached the Gulf of St. Lawrence on the morning of the 20th, moderate north and northwest winds prevailing along the American coast as far south as Philadelphia. The rate of movement during the next 24 hours was very rapid, and on the 21st it was central near latitude 42°, longitude 32°. The barometer fell to 29.06 inches and the wind increased, as all vessels between the thirtieth and fiftieth meridians, north of the forty-fifth parallel, reported southwest to northwest gales of from 40 to 64 miles an hour. On December 22 the center was near latitude 54°, longitude 23°, the barometer having risen slightly since the 21st, while the force of the wind remained about the same, with hail, rain, and snow prevailing over a large part of the area.

On the 29th there was a low, whose apparent center was near latitude 50° and longitude 25°, where the lowest barometer reading was 29.13 inches. A number of vessels between the thirty-sixth and forty-second meridians reported northwesterly winds of from 54 to 90 miles an hour, the latter being the highest velocity reported during the month. On the 30th the center had moved off the limits of the chart, although winds of gale force were reported between the twenty-fifth and thirty-seventh meridians, accompanied by rain, hail, and snow.

TEMPERATURE.

The temperature departures of the air over the ocean, taken as a whole, were irregular. North of the fortieth parallel and between the fifteenth and fiftieth meridians, the temperatures were from 1 to 7 degrees (F.) below the

normal, while in the waters adjacent to the European coast the departures ranged from 4 to 8 above.

Off the American coast north of the fortieth parallel the temperatures were lower than usual. South of that line they were somewhat above the normal, decreasing as the shore was approached, the departures being negative at a number of Weather Bureau stations on the Atlantic coast, as shown in the following list: Eastport, −1.7°F.; Portland, −2.7°; Boston, −1.2°; New York, −2.9°; Norfolk, −3.0°; Hatteras, −0.8°; Washington, −1.6°; Charleston, −2.5°; Jacksonville, −0.6°; Miami, +1.5°; Key West, +1.3°; Tampa, +1.7°; Pensacola, −3.1°; New Orleans, −3.6°; Galveston, −6.1°; and Corpus Christi, −5.8°.

The lowest temperature reported for the month over the ocean was 16° F., and occurred in the 5-degree square adjacent to the Canadian coast, between the fiftieth and fifty-fifth parallels. The highest temperature recorded, 83°, occurred on three different days in the 5-degree square between latitude 10° and 15° and longitude 80° and 85° W.

FOG.

The number of days on which fog was observed was considerably below the normal, as it only occurred on the first four days of the month between the fortieth and forty-fifth parallels, west of the forty-seventh meridian, while it was reported by one vessel on the 25th near latitude 50°, longitude 12°, and again on the 30th near latitude 45°, longitude 50°.

PRECIPITATION.

The number of days on which hail and snow occurred on the northern sailing routes was greatly above the average, as hail was reported on 25 days and snow on 23, while both hail and snow occurred on 20 days.